

National Monument had storm-deposited debris at elevations that averaged

presented in Table 1.

profile sites. Samples were collected from the top 10 cm of beach at 3-5 locations along each beach profile. Wherever possible the same sample sites were reoccupied in successive years. Laboratory analyses were made of grain size using rapid sediment analyzers and hydrophotometers. Sediment size data are presented in Table 1. On this map sample numbers are shown in parentheses under the profile station number at which they were collected. Three separate prefixes: 76, J77, and S77, are used to delineate individual times of profile and sample collection. The profiles correspond, respectively, to: Summer 1976, January 1977, and Summer 1977. Sample numbers in Table 1 are preceded by one of the three prefixes. Profiles are not presented with this map but are given in Molnia and Wheeler (1978).

Band 1 depicts the location of sediment samples and the location of

Band 2 displays data about beach morphology, beach composition, and erosional state of back-beach scarps using a series of capital letters as symbols. In addition, the direction and distance of stream offset are shown Data displayed in band 2 include:

A - Areas of active erosion where from 1-3 m of erosion of the back-beach scarp were measured during the period covered by field surveys. B - Areas subject to glacial lake breakout floods. Post and Mayo (1971) identify Lituya Glacier and Finger Glacier as potential sources of glacial flooding. We have added South Crillon Glacier, Fairweather Glacier, and Sea Otter Glacier as possible flood sources. C - Beaches with cusps. Many beach segments had well-developed cusps and sets of cusps. In the vicinity of Dagelet and Crillon Rivers, many beaches had multiple cusps, many as high as 2 m. D - Abundant storm-deposited debris. Near Fairweather Slough, the maximum height of storm surge deposits was about 12 m above mean lower low water (MLLW). Forty sites in the Gulf of Alaska coastal area of Glacier Bay

greater than 8.0 m above MLLW. H - Heavy mineral concentrations. Many beach profile sites and adjacent areas contained wind and storm lag deposits that were greater than 75 percent heavy minerals. Garnet was the most common heavy mineral seen. I - Ice-cored beaches. M - Ice-cored moraines.

W - Washover deposits and fans. Band 3 contains symbols that indicate the grain size of the material sections of Lituya Bay, all the beach sediment observed is coarser than fine sand size. Symbols depict sand, pebbles, cobbles, boulders, and bedrock

outcrops. Sediment parameters of samples collected from the beaches are

Hayes, M.O., Brown, P.J., and Michel, Jacqueline, 1976, Coastal morphology and sedimentation--Lower Cook Inlet, Alaska: University of South Carolina Coastal Research Center, Technical Report no. 12-DRD, 107 p. Miller, D.J., 1960, Giant waves in Lituya Bay, Alaska: U.S. Geological Survey Professional Paper 354-C, p. 51-86. Molnia, B.F., and Wheeler, M. C., 1978, Report on the beach dynamics, geology, and oil spill susceptibility of the Gulf of Alaska coastline in Glacier Bay National Monument - Sea Otter Creek to Icy Point: U.S. Geological Survey Open-File Report 78-284, 140 p., 1 pl. Owens, E.H., 1977, Coastal environments of Canada: The impact and clean-up of oil spills: Economic and Technical Review Report EPS-3-EC-77-13, Canadian Environmental Protection Service Ottawa, Ontario, 413 p.

Post, Austin, and Mayo, L.R., 1971, Glacier dammed lakes and outburst floods

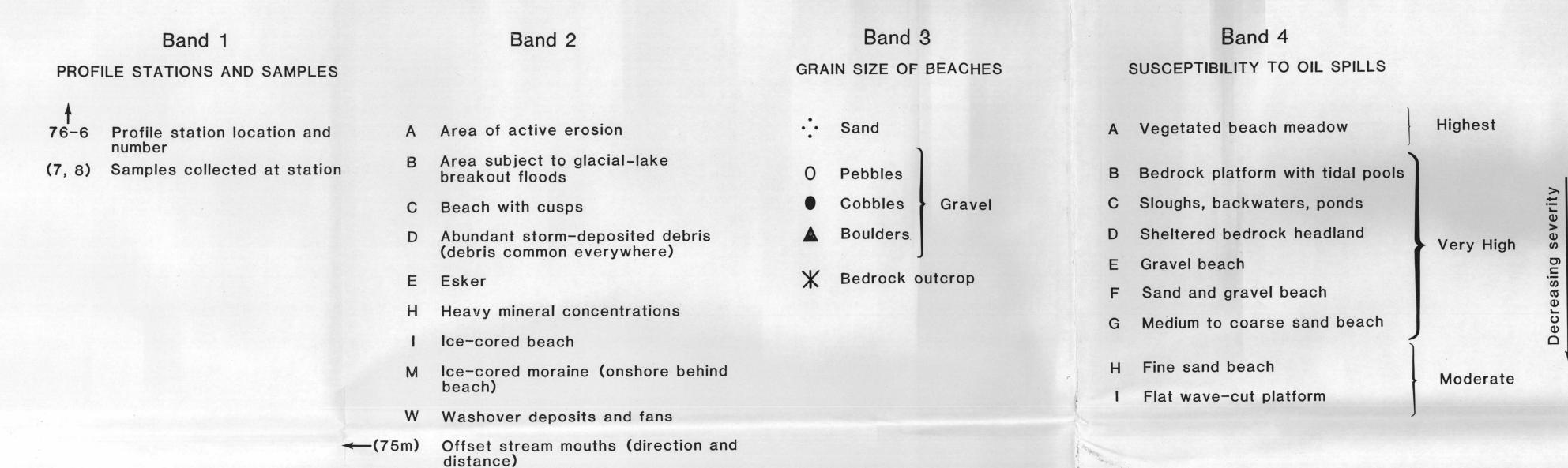
in Alaska: U.S. Geological Survey Hydrogeologic Investigations Atlas HA-455.

pooling of oil, than platforms in the area studied by Hayes, Brown and Michel. Oil trapped in the joints and fractures may slowly be released to the

References Cited

surface so that tidal pool organisms may experience continuous long-period

where discontinuous) 1958 rockslide scar ••••• Scourline from 1958 giant wave



Note: No landward sequence is implied by the position of data in bands 1-4. All data pertain to the active beach and back-beach environment.

MAP SHOWING ENVIRONMENTAL GEOLOGY OF GULF OF ALASKA COASTAL AREA, GLACIER BAY NATIONAL MONUMENT

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